

## ABSTRACT OF THE DISCLOSURE

5 An optical wave power control device and method enables signal control, such as modulation  
transferring and switching, to be effected with the application of very low power to a controller  
which is in optical communication with a recirculating mode resonator and an optical  
propagation element. The propagation element is configured such that is in power  
communication with a high Q volumetric resonator. Power of a chosen resonant wavelength is  
10 coupled into said resonator, where it circulates with very low loss and returns energy to the  
propagation element. By introducing a control signal into the controller, the propagated power  
can be varied between substantially full and substantially zero amplitudes. Loss factors can be  
maintained such that said resonator is overcoupled, i.e. parasitic losses are less than coupling  
losses, and a critical coupling condition exists in which a small swing in the controller causes a  
disproportionate change in the optical output signal. The controller is preferably effectuated by  
15 an interferometer in the optical path of said resonator and a control signal, which can be an  
applied voltage, current or optical signal.